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A GIGANTIC CERATOPSIAN DINOSAUR, *TRICERATOPS MAXIMUS*, NEW SPECIES

BY BARNUM BROWN

A series of eight vertebrae and two ribs, in the American Museum collection from the Hell Creek Beds of Montana, represent the largest individual of the horned dinosaurs so far recorded from the Cretaceous deposits of America.

This specimen is unique not only on account of its enormous size but also in the character and proportions of the vertebrae which distinguish it as a new species.

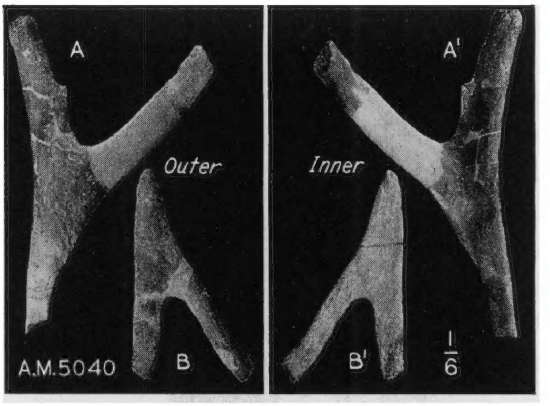

Fig. 1.—*Triceratops maximus*, Amer. Mus. No. 5040. Ribs of fused cervica section. One-sixth natural size. A. Third vertebral rib of left side, outer surface. B. Axis rib of right side, outer surface. A^1. Third vertebral rib of left side, inner surface. B^1. Axis rib of right side, inner surface.

More characteristic parts of the skeleton, when discovered, may show that this species belongs to another genus, but until adequate material is secured it is referred to *Triceratops*.

The specimen was found by Mr. P. C. Kaisen in 1909 in the basal sandstones of the Hell Creek Beds near a spring on Rock Creek, where seven vertebrae were lying in sequence, the eighth, probably the fifth (?) dorsal, being removed to some distance. Cattle had trampled the

specimen for years, completely destroying all other parts that had originally been fossilized.

It is, of course, wild speculation to attempt an estimate of the size of the skeleton from such meager remains because we know little of individual variation, sexual differences or proportional variations among different genera of the Ceratopsia.

In the Lance and the Hell Creek beds, which are practically contemporaneous in age, fossils preserved in clay are invariably distorted to such degree that they are rarely presentable as exhibition material or reliable for determining specific characters. In consequence such specimens are rarely collected.

During ten seasons of field work in these strata I personally have examined not less than five hundred Ceratopsian skulls and partial skeletons of such character, but none of them in size approached this record specimen—hence in all probability its size cannot be attributed to sex.

Triceratops maximus, new species

TYPE OF SPECIES.—A. M. No. 5040, eight free vertebrae and two ribs from anterior fused cervical section.

HORIZON AND LOCALITY.—Hell Creek Beds. Rock Creek, twenty miles south of Lismas, Garfield County, Montana.

SPECIFIC CHARACTERS.—Axis rib reduced in size. Third cervical rib massive. Centra of free cervical vertebrae short, vertical and transverse diameters of articular faces nearly equal; sides deeply constricted; ventral surface flat. Anterior dorsal centra higher than broad.

The proportions of the preserved vertebrae indicate an animal having a short powerful neck and a large skull, as the free cervicals point to a fused anterior series larger than in *T. prorsus*.

The ribs are incomplete but comparison with *T. brevicornus* type leaves little doubt that we are dealing with the axis rib on the right side and the third vertebral rib on the left side. Missing sections have been introduced according to the ratios between *T. brevicornus* and *T. maximus*.

The axis rib is Y-shaped and rather delicate, with the tubercular part slightly longer than the capitular end, which is continuous with the shaft. It terminates in a short thin flat blade.

The third vertebral rib is strikingly different in form and size. It is extremely massive for a cervical rib. Evidently not more than two or three inches are missing from the distal end. Its tubercular portion rises as a thin flat blade terminating in a head set oblique to the shaft. The capitular head is massive and articulates with the centrum at an oblique

angle, almost at right angles to the tubercular head, and but slightly set apart from the shaft.

The five free cervical centra are extremely short for their breadth and all are characterized by deeply excavated sides with flat, very rugose, ventral surfaces. The anterior faces are plane, and posterior faces slightly concave with wide beveled borders indicating a thick cartilage

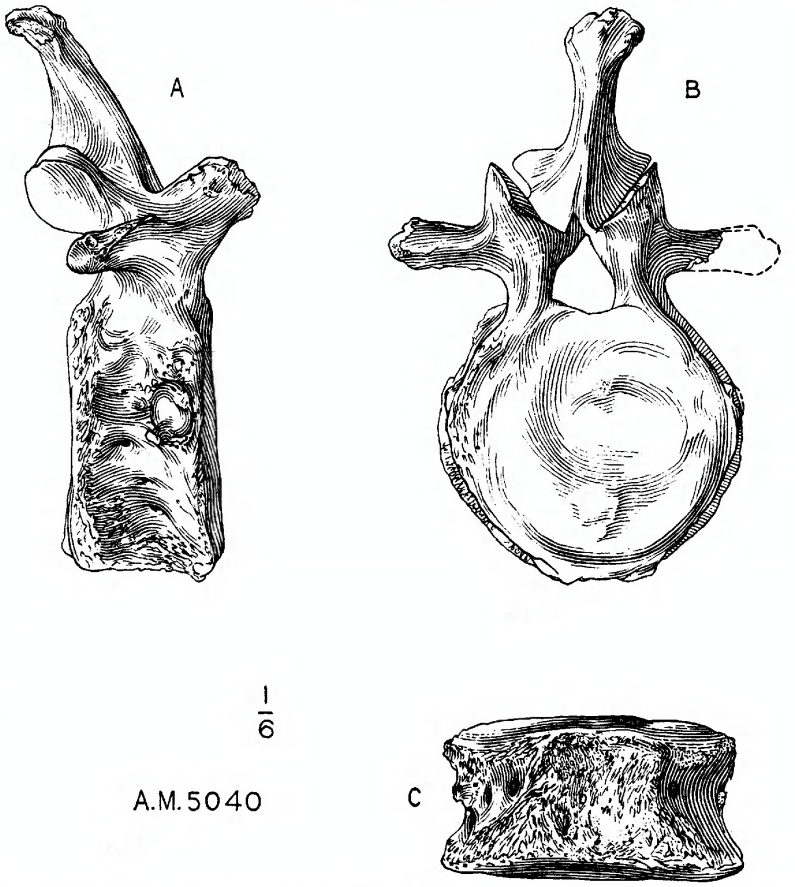

Fig. 2.—*Triceratops maximus*, Amer. Mus. No. 5040. First free cervical vertebra. One-sixth natural size. A. right side. B. Anterior view. C. Ventral view.

union. The neural canal is extremely large. The spines, zygapophyses, and transverse processes, where preserved are proportionate to the centra, but show no characters to distinguish them from the same vertebrae in other species aside from the extraordinary size. The facets for the capitular heads of the ribs rise gradually from the middle of the centra,

Fig. 3.—*Triceratops maximus*, Amer. Mus. No. 5040. Cervical and dorsal vertebrae, right side. One-sixth natural size. A. Fourth cervical. F and G. Fourth and second dorsals. H. Fifth (?)dorsal.

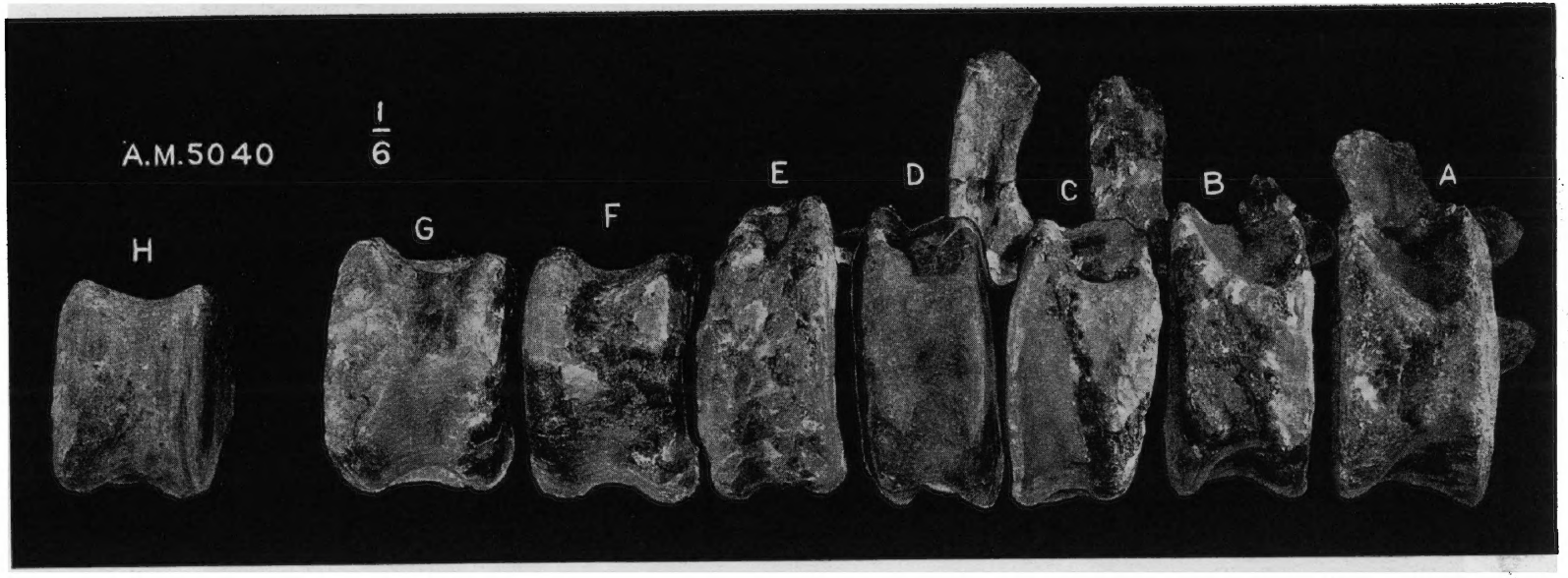

Fig. 4.—*Triceratops maximus*, Amer. Mus. No. 5040. Cervical and dorsal vertebrae, ventral view. One-sixth natural size.

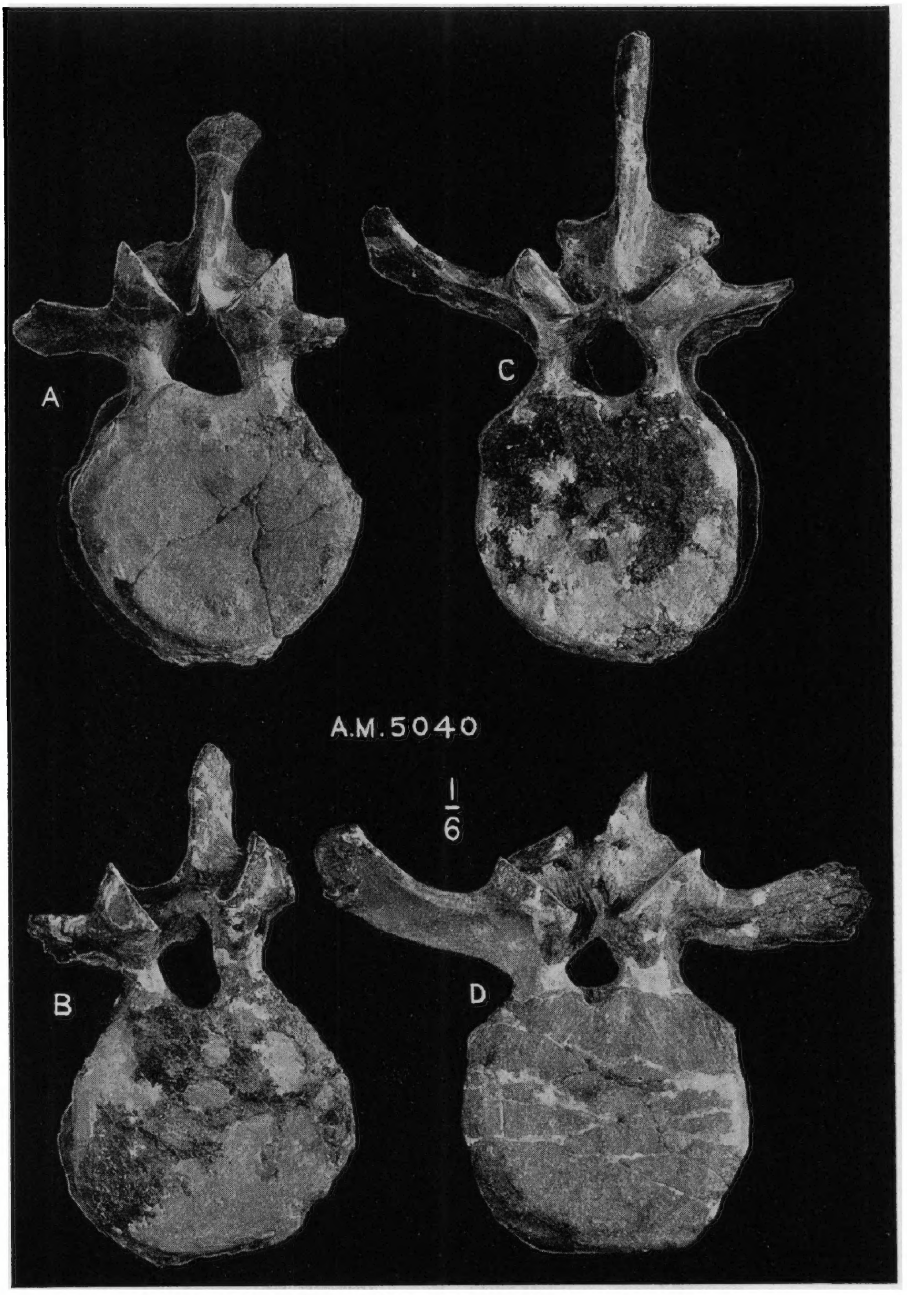

Fig. 5.—*Triceratops maximus*, Amer. Mus. No. 5040. Cervical vertebrae, anterior view. One-sixth natural size.

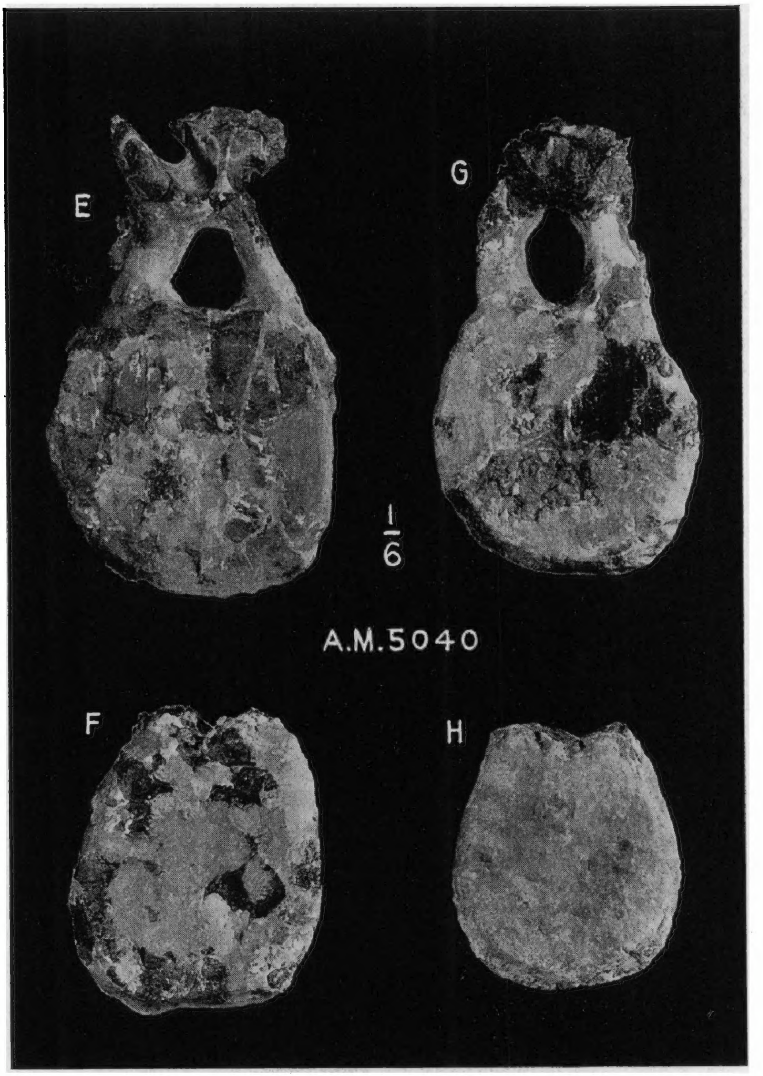

Fig. 6.—*Triceratops maximus*, Amer. Mus. No. 5040. Cervical and dorsal vertebrae, anterior view. One-sixth natural size.

near the anterior end, on the first which is the fourth cervical vertebra, to the eighth where it is located opposite the base of the neural canal.

Another prominent character in each of the cervical vertebrae is a vertical series of three large foramina on each side of the centra, spaced approximately one inch apart.

The centra of the dorsals are somewhat longer than the cervical series, and the fifth dorsal is considerably higher than it is broad, a character that is common in all other species of this genus, but the centra are relatively longer than they are in *T. brevicornus* and *T. calicornis*.

MEASUREMENTS

First free cervical vertebra:	
Length of centrum at base	120 mm.
Vertical diameter, anterior face	193 mm.
Transverse diameter, anterior face	219 mm.
Vertical diameter, posterior face	184 mm.?
Transverse diameter, posterior face	225 mm.?
Height of spine above base of neural canal	234 mm.
Length of transverse process from center of spine	150 mm.
Second free cervical vertebra:	
Length of centrum at base (face exfoliated)	107 mm.
Vertical diameter, anterior face	183 mm.
Transverse diameter, anterior face	216 mm.
Vertical diameter, posterior face (crushed)	194 mm.
Transverse diameter, posterior face	210 mm.
Third free cervical vertebra:	
Length of centrum at base	118 mm.
Vertical diameter, anterior face	200 mm.
Transverse diameter, anterior face	196 mm.
Vertical diameter, posterior face	193 mm.
Transverse diameter, posterior face	212 mm.
Height of spine above base of neural canal	277 mm.
Length of transverse process to middle spine	203 mm.
Fourth free cervical vertebra:	
Length of centrum at base	103 mm.
Vertical diameter, anterior face	191 mm.
Transverse diameter, anterior face	215 mm.
Vertical diameter, posterior face	206 mm.
Transverse diameter, posterior face	205 mm.
Length of transverse process to middle of spine	200 mm.
Fifth free cervical vertebra:	
Length of centrum at base	104 mm.
Vertical diameter, anterior face	209 mm.
Transverse diameter, anterior face	215 mm.
Vertical diameter, posterior face	195 mm.
Transverse diameter, posterior face	205 mm.

First dorsal vertebra (slightly crushed):	
Length of centrum at base	120 mm.
Vertical diameter, anterior face	207 mm.
Transverse diameter, anterior face	184 mm.
Vertical diameter, posterior face	203 mm.
Transverse diameter, posterior face	190 mm.
Second dorsal vertebra (slightly crushed):	
Length of centrum at base	128 mm.
Vertical diameter, anterior face	177 mm.
Transverse diameter, anterior face	170 mm.
Vertical diameter, posterior face	194 mm.
Transverse diameter, posterior face	191 mm.
Fifth (?) dorsal vertebra:	
Length of centrum at base	110 mm.
Vertical diameter, anterior face	189 mm.
Transverse diameter, anterior face	158 mm.
Vertical diameter, posterior face	182 mm.
Transverse diameter, posterior face	155 mm.